

CLAIMS

1. A tuning circuit coupled to a voltage controlled oscillator, said voltage controlled oscillator including a phase locked loop coupled to a loop filter, said loop filter generating a fine tuning voltage to said voltage controlled oscillator, said tuning circuit comprising:

5 a lock detect monitoring circuit coupled to said phase locked loop, said lock detect monitoring circuit configured to determine a state of said phase locked loop;

a VTUNE monitoring circuit configured to determine said fine tuning voltage generated by said loop filter;

10 an autotuner circuit connected to said lock detect monitoring circuit and said VTUNE monitoring circuit, said autotuner circuit configured to provide coarse tuning of said voltage controlled oscillator based on said fine tuning voltage and said state of said phase locked loop.

2. The tuning circuit of claim 1 wherein said autotuner circuit defines a capacitive value of a tank circuit of said voltage controlled oscillator.

3. The tuning circuit of claim 1 wherein said autotuner circuit defines a selection setting for a plurality of switched capacitors, said plurality of switched capacitors defining a capacitive value of a tank circuit of said voltage controlled oscillator.

20 4. The tuning circuit of claim 1 wherein said autotuner circuit adjusts a coarse tuning

value of said voltage controlled oscillator, said coarse tuning value defining a capacitive value of a tank circuit of said voltage controlled oscillator.

5. The tuning circuit of claim 4 wherein said autotuner circuit sets said coarse tuning value of said voltage controlled oscillator when said state of said phase locked loop is locked and said fine tuning voltage is within a predetermined voltage range.

6. The tuning circuit of claim 5 wherein said autotuner circuit increases said coarse tuning value to a higher setting if said fine tuning voltage is greater than a first voltage threshold, wherein said higher setting increases a capacitive value of a tank circuit of said voltage controlled oscillator.

7. The tuning circuit of claim 6 wherein said autotuner circuit decreases said coarse tuning value to a lower setting if said fine tuning voltage is less than a second voltage threshold, wherein said lower setting decreases said capacitive value of said tank circuit of said voltage controlled oscillator.

8. The tuning circuit of claim 1 wherein said loop filter is not disconnected from said voltage controlled oscillator during said coarse tuning of said voltage controlled oscillator.

9. A method for tuning a voltage controlled oscillator, said voltage controlled oscillator including a phase locked loop coupled to a loop filter, said loop filter generating a fine tuning voltage to said voltage controlled oscillator, said method comprising the steps of:

- 5 monitoring said phase locked loop to determine a state of said phase locked loop;
 monitoring said loop filter to determine said fine tuning voltage generated by said
loop filter;
 coarse tuning said voltage controlled oscillator based on said fine tuning voltage
and said state of said phase locked loop.

10

10. The method of claim 9, wherein said coarse tuning further comprises defining a capacitive value of a tank circuit of said voltage controlled oscillator based on said fine tuning voltage and said state of said phase locked loop.

- 15 11. The method of claim 9, wherein said coarse tuning further comprises defining a selection setting for a plurality of switched capacitors, said plurality of switched capacitors defining a capacitive value of a tank circuit of said voltage controlled oscillator.

- 20 12. The method of claim 9, wherein said loop filter is not disconnected from said voltage controlled oscillator during said tuning of said voltage controlled oscillator.

13. The method of claim 9, wherein said coarse tuning further comprises setting a coarse tuning value of said voltage controlled oscillator when said state of said phase locked loop is locked and said fine tuning voltage is within a predetermined voltage

5 range.

14. The method of claim 13, wherein said coarse tuning further comprises increasing said coarse tuning value to a higher setting if said fine tuning voltage is greater than a first voltage threshold, said higher setting increasing a capacitive value of a tank circuit of said

10 voltage controlled oscillator.

15. The method of claim 14, wherein said coarse tuning further comprises decreasing said coarse tuning value to a lower setting if said fine tuning voltage is less than a second voltage threshold, said lower setting decreasing said capacitive value of said tank circuit

15 of said voltage controlled oscillator.

16. The method of claim 15, wherein said coarse tuning further comprises designating a selection setting for a plurality of switched capacitors, said plurality of switched capacitors defining a capacitive value of said tank circuit of said voltage controlled

20 oscillator.

17. A tuning circuit coupled to a voltage controlled oscillator, said voltage controlled oscillator including a phase locked loop coupled to a loop filter, said loop filter generating a fine tuning voltage to said voltage controlled oscillator, said tuning circuit comprising:

a lock detect monitoring circuit coupled to said phase locked loop, said lock detect

5 monitoring circuit configured to determine a state of said phase locked loop;

a VTUNE monitoring circuit configured to determine said fine tuning voltage generated by said loop filter;

an autotuner circuit connected to said lock detect monitoring circuit and said

VTUNE monitoring circuit, said autotuner circuit configured to define a coarse tuning

10 value of said voltage controlled oscillator based on said fine tuning voltage and said state of said phase locked loop, wherein said coarse tuning value designates a selection setting for a plurality of switched capacitors, said plurality of switched capacitors defining a capacitive value of a tank circuit of said voltage controlled oscillator.

15 18. The tuning circuit of claim 17 wherein said autotuner circuit sets said coarse tuning value of said voltage controlled oscillator when said state of said phase locked loop is locked and said fine tuning voltage is within a predetermined voltage range.

19. The tuning circuit of claim 18 wherein said autotuner circuit increases said coarse
20 tuning value to a higher setting if said state of said phase locked loop is not locked and said fine tuning voltage is greater than a first voltage threshold, wherein said higher

setting increases said capacitive value of said tank circuit of said voltage controlled oscillator.

20. The tuning circuit of claim 19 wherein said autotuner circuit decreases said coarse
5 tuning value to a lower setting if said state of said phase locked loop is not locked and
said fine tuning voltage is less than a second voltage threshold, wherein said lower setting
decreases said capacitive value of said tank circuit of said voltage controlled oscillator.